WHAT IS CLAIMED IS:

1. A system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node, comprising:

an input event structure including at least a service access point (SAP) and a connection identifier (CID) associated with a protocol layer service involving a select service user layer and service provider layer combination for a particular connection link;

a context switch and controller block operable to retrieve latest state-specific context information from a context storage area based on said SAP and CID; and

a generic state logic program structure operable to process at least a portion of said input event structure based on said latest state-specific context information to generate next-state context information and at least an output event vector including at least one SAP and at least one CID associated with a select destination point to which said next-state context information is to be routed, wherein said next-state context information is operable to be stored in said context storage area based on a storage SAP and CID provided in said input event vector.

2. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 1, further comprising a state input queue structure and a state output queue structure operably disposed between said generic state logic program structure and said context switch and controller block for facilitating information flow therebetween.

3. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 2, further comprising a plurality of state registers operably disposed between said generic state logic program structure and said context switch and controller block.

4. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 3, wherein at least one of said generic state logic program structure and said context switch and controller block is implemented as a field programmable gate array.

5. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 3, wherein at least one of said generic state logic program structure and said context switch and controller block is implemented as a programmable logic device.

6. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 3, wherein at least one of said generic state logic program structure and said context switch and controller block is implemented as an application specific integrated circuit.

7. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 3, wherein at least one of said generic state logic program structure and said context switch and controller block is implemented as a device selected from the group consisting of a field programmable gate array, a programmable logic device, an application specific integrated circuit, an embedded processor and a general purpose processor.

8. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 7, wherein said generic state logic program structure is personalizable as a Message Transfer Part-Level 3 (MTP-3) queue control state machine based on said state-specific context information in said context storage area.

9. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 7, wherein said generic state logic program structure is personalizable as a Service Specific Coordination Function (SSCF) control state machine based on said state-specific context information in said context storage area.

10. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 7, wherein said generic state logic program structure is personalizable as an Asynchronous Transfer Mode (ATM) Adaptation Layer (AAL) control state machine based on said state-specific context information in said context storage area.

11. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 7, wherein said generic state logic program structure is personalizable as an ATM queue control state machine based on said state-specific context information in said context storage area.

12. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 7, wherein said generic state logic program structure is personalizable as an ATM control state machine based on said state-specific context information in said context storage area.

13. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 7, wherein said generic state logic program structure is personalizable as a Service Specific Connection Oriented Protocol (SSCOP) control state machine based on said state-specific context information in said context storage area.

14. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 7, wherein said generic state logic program structure is personalizable as a Traffic Metering and Measurement (TMM) control state machine based on said state-specific context information in said context storage area.

15. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 7, wherein said generic state logic program structure is personalizable as a Timer control state machine based on said state-specific context information in said context storage area.

16. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 7, wherein said generic state logic program structure is personalizable as a state machine operating to transfer SSCOP layer data based on said state-specific context information in said context storage area.

17. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 7, wherein said generic state logic program structure is personalizable as a state machine operating to transfer SSCF layer data based on said state-specific context information in said context storage area.

18. The system for effectuating at least one protocol layer of a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 7, wherein said generic state logic program structure is personalizable as a state machine operating to transfer AAL layer data based on said state-specific context information in said context storage area.

19. A system for implementing a high speed link (HSL) protocol stack having a plurality of protocol layers at an application node disposed in a network, comprising:

a link data processor for coordinating cell assembly and disassembly operations with respect to traffic flowing into and out of said application node;

a link control processor coupled to said link data processor via an inter-device interface, said link control processor operating to maintain link states for control portions of at least one of said protocol layers by utilizing a personalizable generic state processing architecture;

a data transfer controller coupled said link control processor via another inter-device interface for controlling burst transfers of signal units (SUs) between a host memory provided for said application node and a local cell memory associated with said link data processor; and

a context memory block disposed between said link control processor and said data transfer controller for storing state-specific context information based on a service access point (SAP) and a connection identifier (CID) associated with at least one of said protocol stack layers across at least one active connection maintained by said application node in said network, said context information for personalizing said generic state

processing architecture to effectuate functionality of a select protocol stack layer.

20. The system for implementing an HSL protocol stack having a plurality of protocol layers at an application node disposed in a network as set forth in claim 19, further comprising an error reporting block having a serial interface at least for reporting physical errors including at least one of a memory parity error, queue overflow error and an inter-device interface error.

21. The system for implementing an HSL protocol stack having a plurality of protocol layers at an application node disposed in a network as set forth in claim 19, wherein at least one of said link data processor, said link control processor and said data transfer controller is implemented as a device selected from the group consisting of a field programmable gate array, a programmable logic device, an application specific integrated circuit, an embedded processor and a general purpose processor.

22. The system for implementing an HSL protocol stack having a plurality of protocol layers at an application node disposed in a network as set forth in claim 21, wherein said select protocol stack layer comprises a Message Transfer Part-Level 3 (MTP-3) layer.

23. The system for implementing an HSL protocol stack having a plurality of protocol layers at an application node disposed in a network as set forth in claim 21, wherein said select protocol stack layer comprises a Service Specific Coordination Function (SSCF) layer.

24. The system for implementing an HSL protocol stack having a plurality of protocol layers at an application node disposed in a network as set forth in claim 21, wherein said select protocol stack layer comprises a Service Specific Connection Oriented Protocol (SSCOP) layer.

25. The system for implementing an HSL protocol stack having a plurality of protocol layers at an application node disposed in a network as set forth in claim 21, wherein said select protocol stack layer comprises an Asynchronous Transfer Mode (ATM) Adaptation Layer (AAL).

26. The system for implementing an HSL protocol stack having a plurality of protocol layers at an application node disposed in a network as set forth in claim 19, wherein said link data processor and said link control processor are integrated into a single block.

27. A method for effectuating a layer service in a protocol stack operable to implement a high speed communication link at a network node, comprising the steps of:

receiving, at a context switching system, an input event for said layer service from a service user layer;

retrieving, by said context switching system, state-specific context information from a context memory based on a service access point (SAP) and a connection identifier (CID) relating to said input event;

processing at least a portion of said input event by a generic state machine (GSM) logic structure personalized by said state-specific context information;

generating, by said personalized GSM logic structure, next-state information and at least an output event vector including SAP/CID information for identifying at least one service user destination; and

storing said next-state information in said context memory based on said SAP/CID information provided in said input event.

28. The method for effectuating a layer service in a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 27, wherein at least one of said GSM logic structure and said context switching system is implemented as a device selected from the group consisting of a field programmable gate array, a programmable logic device, an application specific integrated circuit, an embedded processor and a general purpose processor.

29. The method for effectuating a layer service in a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 28, wherein said GSM logic structure is personalized as a Message Transfer Part-Level 3 (MTP-3) queue control state machine based on said state-specific context information retrieved from said context memory.

30. The method for effectuating a layer service in a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 28, wherein said GSM logic structure is personalized as a Service Specific Coordination Function (SSCF) control state machine based on said state-specific context information retrieved from said context memory.

31. The method for effectuating a layer service in a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 28, wherein said GSM logic structure is personalized as a Service Specific Connection Oriented Protocol (SSCOP) control state machine based on said state-specific context information retrieved from said context memory.

32. The method for effectuating a layer service in a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 28, wherein said GSM logic structure is personalized as an Asynchronous Transfer Mode (ATM) Adaptation Layer (AAL) control state machine based on said state-specific context information retrieved from said context memory.

33. The method for effectuating a layer service in a protocol stack operable to implement a high speed communication link at a network node as set forth in claim 28, wherein said GSM logic structure is personalized as an ATM control state machine based on said state-specific context information retrieved from said context memory.